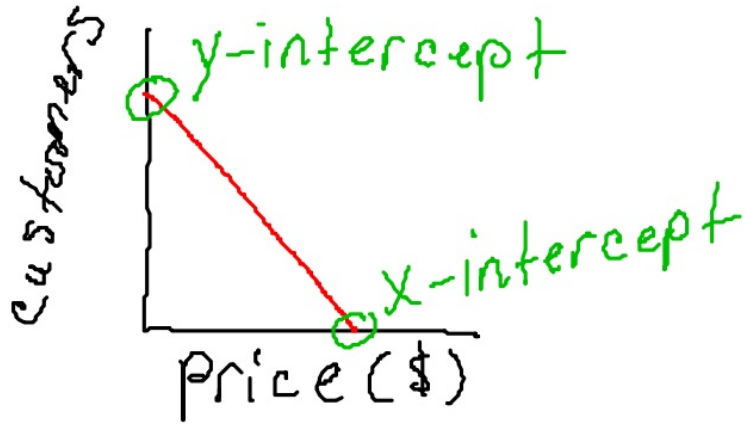
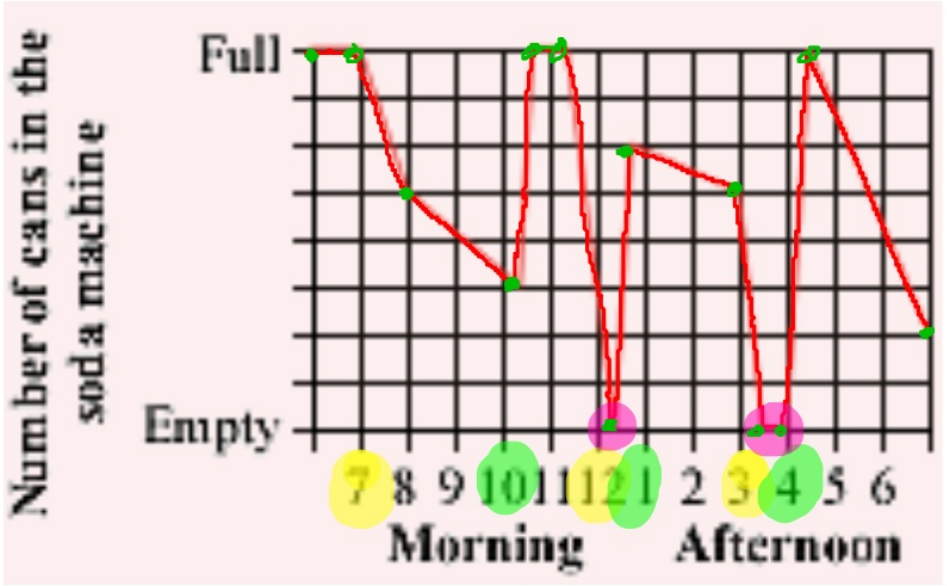
4.1 Interpreting Graphs p. 172



Independent var (x-axis)
we control

Dependent var. (y-axis)
we measure

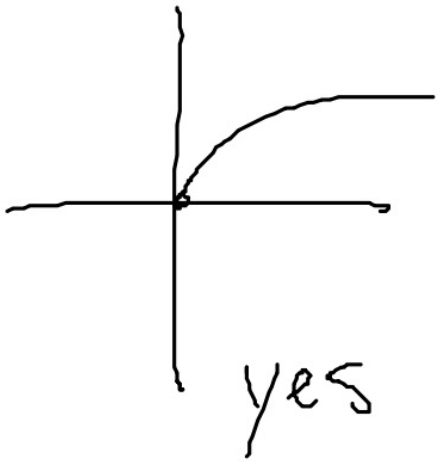


add 2nd machine
fill at 12:00
fill full at 12:00
fill at 3:00 (full)
evening fill to 5:30

- ● we have data
- ○ we have no data

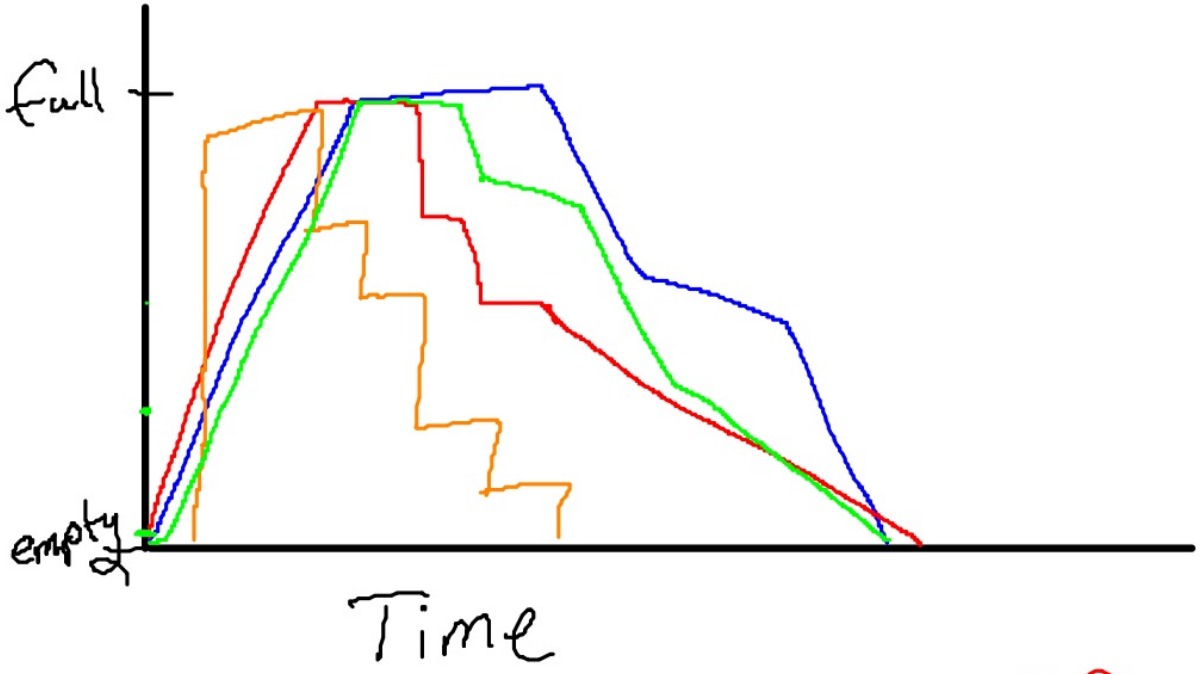
function – graph passes the vertical line test (hits at most once)

– for every x there is at most one y



yes

NO



UA
Q.F
AB
MM

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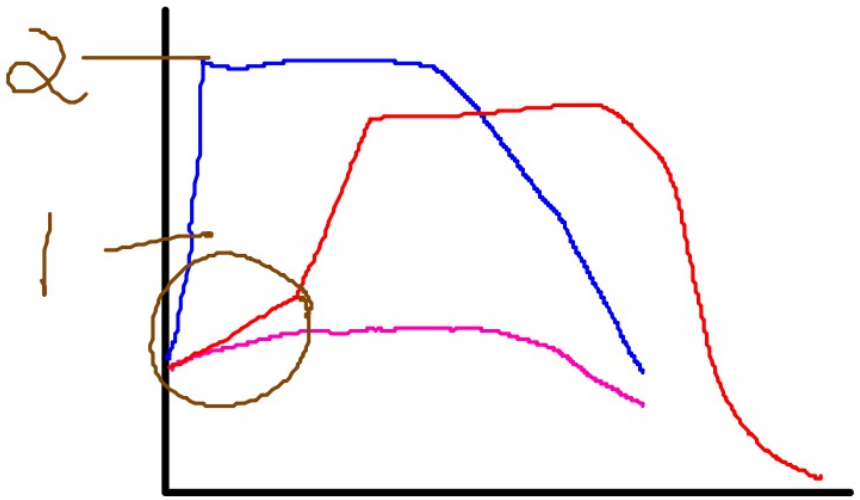
#1-5

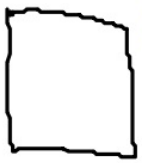
5/10



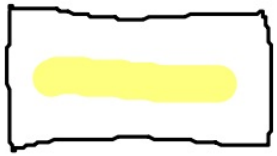
AF
VA

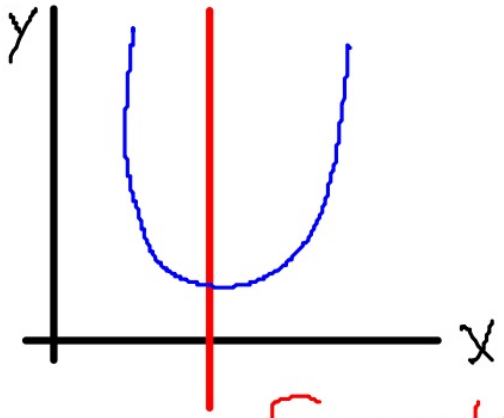
function – graph passes vertical line test
– for every X there is at most one y

relation – how 2 variables relate

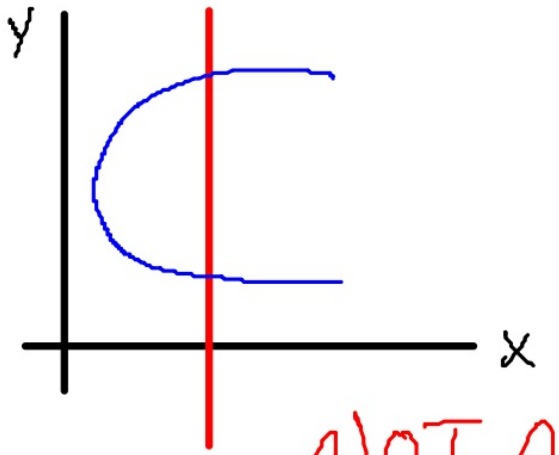


4 x 90° ∠
sides ∥ 4 sides Sides = length





Function



NOT A FUNCTION

$(3,4)(5,2)(7,0)(8,-1)$ ✓

$(3,4)(3,2)(2,0)(5,1)$ ✗

$(3,4)(5,4)(12,4)(-1,4)$ ✓

Function notation

$y = f(x)$ "y equals f of x"

$$y = \frac{(x-2)(x+3)}{\sqrt{x^2-16}} = f(x)$$

$$f(2) = \frac{0 \cdot 5}{\sqrt{-12}} = 0$$

$f(2)$ solve for y when $x=2$

$g(x)$

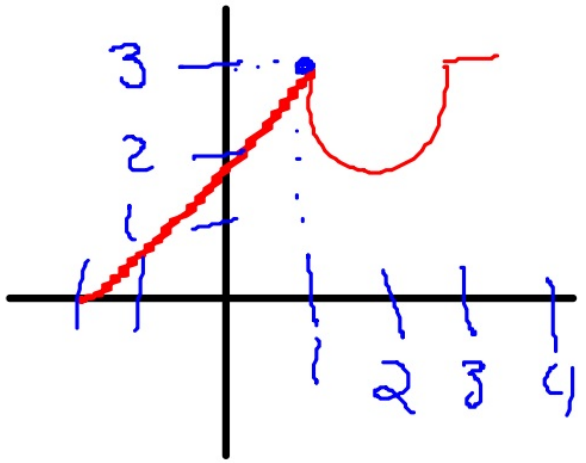
$$f(x) = \frac{2x+5}{x-3}$$

$$f(8) = \frac{2(8)+5}{8-3} = \frac{21}{5} = 4\frac{1}{5} = 4.2$$

$$f(-7) = \frac{2(-7)+5}{-7-3} = \frac{-9}{-10} = 0.9$$

$$g(1) = 3$$

$$g(-2) = 0$$



Inv. a Yes

domain

a - $1 \le x \le 4$

$1 \le y \le 4$

range

x from -1 to 4

b NO

C Yes

d NO yes

e Yes yes

f NO

g NO

h yes

i yes yes

domain - the values used for x

range - the values used for y

$1 < x < 4$ x between 1 and 4

$1 < x \le 4$

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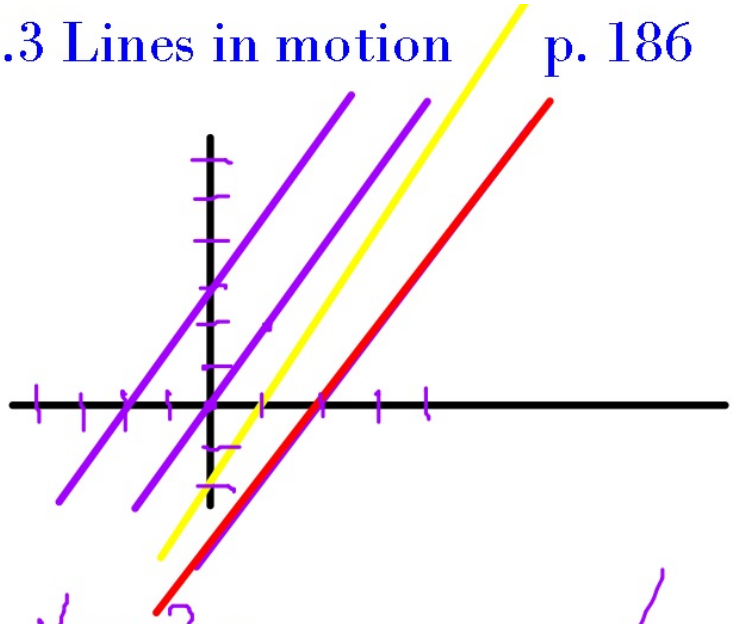


$y = ax + b$

$y = y_1 + b(x - x_1)$

$y = 2x - 4 + 2 = 2x - 2$

$y = 2x$

$y = 2x + 3$ moved/translated up 3 units

$y = 2x + -4$

$y = 2x - 4$ down 4 units

$y = 2x - 4$ right 2 units

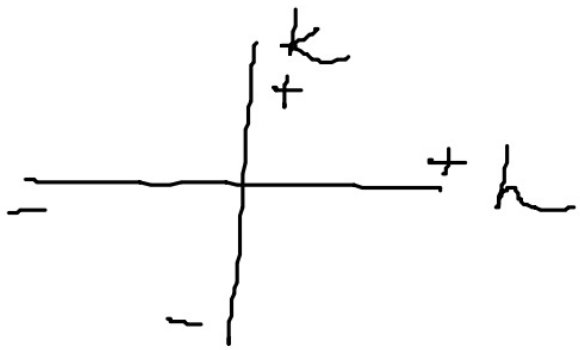
$y = 2x - 2$ right 2 units & up 2 units

h - horizontal movement

k - Vertical movement

Vertical ↕

horizontal ↔



$(y-k) = a(x-h)+b$

$y = f(x)$ $y = f(x-h)+k$

right 2 units $y = f(x-2)+0$

up 2 units $y = f(x-0)+2$

down 2 left 2 $y = f(x+2)-2$

$f(x-^{-}2)+^{-}2$

to the right 4 and down 3

$y = f(x-4) + -3$

$f(x) = 2x + 6$

$y = 2(x-4) + 6 + -3$

$y = 2x - 8 + 6 - 3$

$y = 2x - 5$

move down 11

$f(x) = 3x + 6$

$y = 3(x-4) + 6 - 3$

$y = 3x - 12 + 6 - 3$

$y = 3x - 9$

move down 15

slope matters

$f(x) = 2x$

How is $f(x) = 4 + 2(x - 3)$ a translation?

$h = 3$ right 3

$k = 4$ up 4

$(x - h)$

$y = f(x - h) + k$

$y = 4 + 2(x - 3)$

$(y - 4) = 2(x - 3)$

$(y - k) = a(x - h)$

$f(x) = x + 7$

$f(x + 2) = (x + 2) + 7$

$f(3) = 3 + 7$

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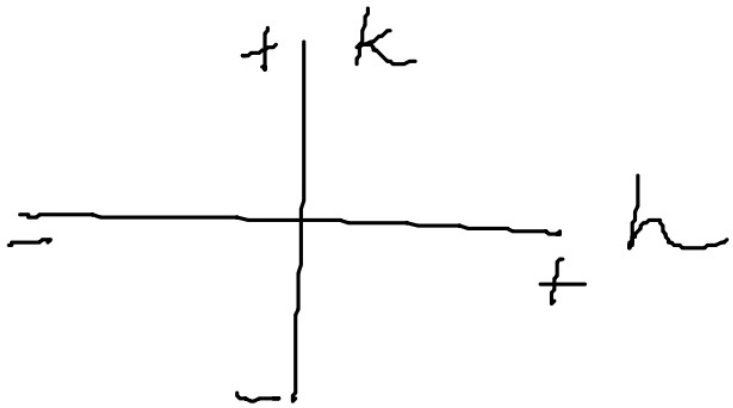
#1-5



$$y = a(x-h) + k$$

$$f(x) = -2x$$

$$f(x+3) = -2(x+3)$$

$$= -2x - 6$$

#1

Linear

non-linear

arithmetic

geometric

shifted geometric

terms

Sequence

U_0

U_n

U_{n-1}

recursive formula

decreases #2

Value

Calculate the value of a car in 5 years (recursive formula)

$U_0 =$

$U_n = U_{n-1}(1 - \%\,decrease)^{time}$

where $n \in \mathbb{Z}$

five number summary #3+4

range

Interquartile Range (IQR)

box plot

skewed (left or right)

symmetric

mean

standard deviation

percentile rank